This normal curve has a mean and a standard deviation.

Next is experimental design.

Time: probability

Q: What % of butterflies had wing length <= 3.56 cm?

A, exact: \( \frac{2}{24} = \frac{1}{12} = 8.3\% \)

A, approx: \( \Phi(0.29) \approx 0.79 \)

\( \Phi \) is the cumulative distribution function of the standard normal distribution.

\[ Z = \frac{X - \mu}{\sigma} \]

\[ z = \frac{3.56 - 3.96}{\sigma} \]

\[ z = -0.414 \]

From the standard normal curve, \( 16\% \) of the data lies between 0 and 1 standard deviation above the mean.

\( \text{Mean} = 0 + 1 \times 1.65 \approx 1.65 \)

\( 1.65 \) is the z-score corresponding to 16% in the standard normal curve.
1. All normal curves are symmetric around their mean.

2. The total area under any normal curve is 100%.

\[ w.d. = \frac{7}{7} \]

\[ 7 \]

\[ \begin{bmatrix} 7 \end{bmatrix} \]

\[ \text{w.d.} \]

\[ \begin{bmatrix} 7, 1, 7 \end{bmatrix} \]

\[ \begin{bmatrix} 7, 1, 7 \end{bmatrix} \]

\[ \text{w.d.} \]

\[ 8.4/0.29 \]

\[ 0.29 \text{ cm} \]

\[ \text{SD} \]

\[ 3.67 \]

\[ \text{raw cm} \]

\[ 3.56 \]

\[ 3.96 \text{ cm} (y) \text{ units} \]

\[ \text{Standard units} \]

\[ \text{Upper limits} \]

\[ \text{Lower limits} \]

\[ \text{Units} \]

\[ -0.40 \]

\[ 3.56 \times 10 - 3.96 \times 10 \]

\[ -0.29 \]

\[ 0.29 \times 10 \]

\[ -1.38 \]

\[ \text{SU} = \frac{\text{raw units} - \text{neg}}{\text{SD}} \]

\[ z = \frac{y - \bar{y}}{s} \]
\[ y = 7 + 3.5 \]

Converting to raw units

\[ \text{exp.} \]

\[ \text{key: } \]

\[ y = \text{brain anatomy} \]

\[ x = \text{cortex weight (mg)} \]

\[ \frac{\text{psych.} \text{ enriched}}{\text{deprived-env.}} \]

\[ \text{treatment (T)} \]

\[ \text{control (C)} \]